

WHAT IS CLAIMED IS:

1. A device adapted for bioconjugation comprising:
- (a) a substrate;
 - 5 (b) one or a plurality of microlocation(s) present on said substrate;
 - (c) a buffer present on or surrounding said microlocation(s);
 - (d) two or more electrodes adapted to receive charge, said two or more electrodes being separated from one another, from said microlocation(s), and from said buffer, but appropriately positioned so as to create an electric field in said
 - 10 microlocation(s) without creating current flow in said microlocation(s) when said two or more electrodes receive charge; and
 - (e) a source for providing charge to said electrodes.
2. The device of claim 1, wherein said microlocation(s) comprise a porous
- 15 media.
3. The device of claim 1, wherein the distance between said two or more electrodes and said buffer is each from about 1.5 nanometers to about 5 centimeters.
4. The device of claim 1, wherein from two to ten electrodes are present.
- 20 5. The device of claim 1, wherein more than two electrodes are present, and said electrodes are in a configuration that approximates that of a cylinder or sphere.
6. The device of claim 1, wherein:
- (a) two electrodes are present, and said electrodes are on opposite sides of said substrate in a stacked arrangement;
 - (b) three electrodes are present, and said electrodes form a triangle in one plane, having a center in said plane, with said substrate located in said center;
 - 30 (c) four electrodes are present, and said electrodes form a square in one plane, having a center in said plane, with said substrate located in said center;
 - (d) five electrodes are present, and said electrodes form a pentagon in one

plane, having a center in said plane, with said substrate located in said center;

(e) five electrodes are present, and said electrodes form a three dimensional triangle, having a center in said triangle, with said substrate located in said center;

(f) six electrodes are present, and said electrodes form a hexagon in one plane,
5 having a center in said plane, with said substrate located in said center; or

(g) six electrodes are present, and said electrodes form a three dimensional square, having a center in said square, with said substrate located in said center.

7. A device adapted for bioconjugation of binding entities, the device
10 comprising:

(a) a substrate;

(b) one or a plurality of microlocation(s) present on said substrate, said microlocation(s) each comprising a binding entity;

(c) a source for applying sample comprising one or more further binding
15 entities to said microlocation(s);

(d) a buffer present on or surrounding said microlocation(s);

(e) a first electrode adapted to receive charge;

(f) one or more other electrode(s) adapted to receive charge; and

(g) a source for providing charge to said first or said one or more other
20 electrode(s);

said first and said one or more other electrode(s) being separated from one another, from said microlocation(s), and from said buffer, but appropriately positioned so as to create an electric field in said microlocation(s) without creating current flow in said microlocations when said two or more electrodes receive charge.

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8. The device of claim 7, wherein said microlocation(s) comprise a porous media.

9. The device of claim 7, wherein the distance between said first electrode and
30 said substrate, and between said one or more other electrode(s) and said substrate, is each from about 1.5 nanometers to about 5 centimeters.

10. The device of claim 7 comprising a plurality of microlocations, wherein said microlocations each comprise a first binding entity having known binding characteristics, and wherein the first binding entity present in one microlocation differs from the first binding entity present in other microlocations in a known and predetermined manner.

11. The device of claim 7, wherein said first binding entity is a probe, and said sample is nucleic acid.

12. The device of claim 7, wherein from two to ten electrodes are present.

13. The device of claim 7, wherein more than two electrodes are present, and said electrodes are in a configuration that approximates that of a cylinder or sphere.

14. The device of claim 7, wherein:

(a) two electrodes are present, and said electrodes are on opposite sides of said substrate in a stacked arrangement;

(b) three electrodes are present, and said electrodes form a triangle in one plane, having a center in said plane, with said substrate located in said center;

(c) four electrodes are present, and said electrodes form a square in one plane, having a center in said plane, with said substrate located in said center;

(d) five electrodes are present, and said electrodes form a pentagon in one plane, having a center in said plane, with said substrate located in said center;

(e) five electrodes are present, and said electrodes form a three dimensional triangle, having a center in said triangle, with said substrate located in said center;

(f) six electrodes are present, and said electrodes form a hexagon in one plane, having a center in said plane, with said substrate located in said center; or

(g) six electrodes are present, and said electrodes form a three dimensional square, having a center in said square, with said substrate located in said center.

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15. A method for bioconjugating binding entities in a device having one or a plurality of microlocation(s) present on a substrate, wherein said microlocation(s)

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comprise a first binding entity, said method comprising the steps of:

(a) applying sample comprising one or more further binding entities to said microlocation(s); and

(b) applying charge to said device to produce an electric field at said microlocation(s) without creating current flow in said microlocation(s), and such that said one or more further binding entities are transported to said first binding entities present in said microlocation(s) under conditions sufficient for bioconjugation to occur.

16. The method of claim 15, wherein said microlocation(s) comprise a porous media.

17. The method of claim 15, which comprises the further step (c) of applying charge to said device to produce an electric field at said microlocation(s) without creating current flow in said microlocation(s), and such that said one or more further binding entities that are not bioconjugated with said first binding entities are transported away from said first binding entities in said microlocation(s).

18. The method of claim 17, wherein steps (b) and (c) are repeated at least once.

19. The method of claim 15, said device comprising a plurality of microlocations, wherein said microlocations each comprise a first binding entity having known binding characteristics, and wherein the first binding entity present in one microlocation differs from the first binding entity present in other microlocations in a known and predetermined manner.

20. The method of claim 15, wherein said first binding entity is a probe, and said sample is nucleic acid.

21. The method of claim 15, wherein charge is applied to said device in such a way as to produce a stirring or mixing motion, or cause a rotational motion at said

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microlocation(s).

22. A method for bioconjugating binding entities in a device having one or a plurality of microlocation(s) present on a substrate, wherein said microlocation(s) comprise a first binding entity, said method comprising the steps of:

(a) applying sample comprising one or more further binding entities to said microlocation(s);

(b) applying charge to said device to produce an electric field at said microlocation(s) without creating current flow in said microlocation(s), and such that said one or more further binding entities are transported to said first binding entities in said microlocation(s) under conditions sufficient for bioconjugation to occur; and

(c) applying charge to said device to produce an electric field at said microlocation(s) without creating current flow in said microlocation(s), and such that said one or more further binding entities that are not bioconjugated with said first binding entities are transported away from said first binding entities in said microlocation(s).

23. The method of claim 22, wherein steps (b) and (c) are repeated at least once.

24. The method of claim 22, said device comprising a plurality of microlocations, wherein said microlocations each comprise a first binding entity having known binding characteristics, and wherein the first binding entity present in one microlocation differs from the first binding entity present in other microlocations in a known and predetermined manner.

25. The method of claim 22, wherein said first binding entity is a probe, and said sample is nucleic acid.

26. The method of claim 22, wherein said microlocation(s) comprise a porous media.

27. The method of claim 22, wherein charge is applied to said device in such a

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1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100	